IN THE CLAIMS:

Please amend claims 1, 3, 8 and 18 as follows:

1. (Currently Amended) An access router, comprising:

a controller which triggers an L2TP Network Server (LNS) function of terminating a plurality of L2TP tunnels or an L2TP Access Concentrator (LAC) function of initiating a plurality of L2TP tunnels for a plurality of virtual routers accommodated therein and utilizes a routing information table to support each one of the virtual routers to perform routing actions independently from other virtual routers;

a plurality of communication I/Fs to transmit and receive packets to and from external communication lines;

a plurality of first logical interfaces ~~associated with~~ multiplexed to handle a plurality of protocols on the communication I/Fs respectively so as to transmit and receive packets to and from user terminals according to a respective protocol and per packet processing action;

a plurality of second logical interfaces ~~associated with~~ multiplexed to handle a plurality of protocols on the communication I/Fs respectively so as to transmit and receive packets to and from backbone networks according to a respective protocol and per packet processing action; and

a memory stored with the routing information table of the plurality of virtual routers which includes a plurality of individual routing tables each corresponding to one of the virtual routers and associating a respective virtual router to one of the communication I/Fs as an input I/F, one of the communication I/Fs as an output I/F, one of the first logical interfaces, and one of the second logical interfaces per packet processing action;

wherein packets received from the first logical interface are forwarded to one of the second logical interfaces associated with the respective virtual router according to the individual routing table corresponding to the respective virtual router associated with the first logical interface, and the packets are processed according to a respective protocol and per packet processing action according to the respective routing table of the respective virtual router.

2. (Previously Presented) An access router according to claim 1,

wherein the controller triggers the LAC function;

a communication I/F to transmit and receive, to and from the user terminals,

the first logical interface is one of PPP frames assigned among the communication I/Fs or a logical interface corresponding to one of PPP sessions; and

the second interface transmits and receives L2TP packets.

3. (Currently Amended) An access router according to claim 1,

wherein the controller triggers the LAC function;

the first logical interface is a logical interface corresponding to one of the L2TP tunnels;

the second interface transmits and receives L2TP packets; and

the LAC function associates each of PPP sessions from a user terminal with the corresponding first logical interface.

4. (Previously Presented) An access router according to claim 1,

wherein the controller triggers the LNS function;

the first logical interface is a communication I/F to transmit and receive L2TP packets assigned among the plurality of communication I/Fs or a logical interface corresponding to one of the L2TP tunnels; and

the second interface transmits and receives L2TP packets to and from the backbone networks.

5. (Previously Presented) An access router according to claim 1,

wherein the controller triggers the LNS function;

the first logical interface is a logical interface corresponding to one of received PPP sessions;

the second interface transmits and receives IP packets to and from backbone networks; and

the LNS function associates each of the PPP sessions multiplexed to a L2TP tunnel with the corresponding first logical interface.

6. (Previously Presented) An access router according to claim 1, wherein the memory further stores a table includes a virtual router field for storing virtual router identifiers, a destination IP address field for storing destination IP addresses of received packets, an address mask field for storing an address mask, a self-address field for storing an

identifier indicating whether a packet to be processed is a self-addressed packet or not, a next hop address field for storing an address of a next hop node, a physical I/F field for storing physical I/F identifiers, and a logical I/F field for storing logical I/F identifiers.

7. (Previously Presented) An access router according to claim 1, wherein a correspondence between the first logical interfaces and the virtual routers and the correspondence between the second logical interfaces and the virtual routers can be changed by a control command received by one of the communication I/Fs.

8. (Currently Amended) An access router comprising:

a plurality of communication I/Fs to connect to external communication lines;

a processor which executes predetermined processing on packets transmitted and received through a user terminal and utilizes an interface table to support each of a plurality of virtual routers ~~accommendated~~ accommodated therein to perform routing actions independently from other virtual routers; and

a memory which stores reference information used to execute predetermined packet processing actions on received packets;

wherein the memory stores:

the interface table holding, for each of interfaces, a relation among a physical interface identifier [[or a]] and at least one logical interface identifier of the received packet, an identifier representing a protocol supported by the logical interface, information specifying a packet processing action to be executed based upon the protocol, and a virtual router identifier, and a plurality of said logical interfaces are multiplexed to handle a plurality of protocols on the communication I/Fs respectively so as to transmit and receive packets to and from user terminals according to a respective protocol and per packet processing action; and

a routing information table holding routing information to be processed by virtual routers corresponding to the virtual router identifiers, respectively;

wherein the processor refers to the interface table and identifies an identifier of a virtual router that corresponds to a respective L2TP tunnel to process the received packets, and reads from the routing information table routing information managed by the virtual router corresponding to the virtual router identifier and forwards the received packets from an receiving logical interface to another interface associated

with a respective virtual router, and the processor processes a received packet according to a respective protocol and per packet processing action according to a respective individual routing table of the respective virtual router.

9. (Previously Presented) An access router according to claim 8, wherein the interface table and the routing information table are stored in different memories.

10. (Previously Presented) An access router according to claim 8, wherein L2TP tunnel identifiers, PPP session identifiers or identifiers of Internet service providers connected through external communication lines are used as the logical interface identifiers.

11. (Previously Presented) An access router according to claim 8, wherein port numbers of the plurality of communication I/Fs are used as the physical interface identifiers.

12. (Previously Presented) An access router according to claim 8,

wherein the processor executes an L2TP Access Concentrator (LAC) function of terminating a plurality of L2TP tunnels or an L2TP Access Concentrator (LAC) function of initiating a plurality of L2TP tunnels for the plurality of virtual routers accommodated therein.

13. (Previously Presented) An access router according to claim 12, wherein

the memory stores a sequence for generating L2TP tunnels and a sequence for terminating the L2TP tunnels corresponding to received packets, and

the processor reads and executes any of the sequences to realize the LAC function and LNS function.

14. (Previously Presented) An access router according to claim 12, further comprising a means for switching between the LAC function and the LNS function.

15. (Previously Presented) An access router according to claim 13, wherein the processor has a setting means for determining which of the sequences is to be read, and switches between the LAC function and the LNS function by the setting means.

16. (Previously Presented) An access router according to claim 8, further comprising:

a program memory storing a program, the program for analyzing contents of management control commands received by the communication I/Fs;

wherein the processor executes the management control commands to authorize, according to a contract, control command sources to change settings in the interface tables corresponding to all the virtual routers.

17. (Previously Presented) An access router according to claim 16, wherein the processor executes the management control commands to authorize a particular control command source to change settings in the interface table corresponding to a particular virtual router.

18. (Currently Amended) A business method implementing via a virtual access router, comprising:

providing the virtual access router including a plurality of communication I/Fs to connect to external communication lines; a processor which executes predetermined processing on packets transmitted and received through a user terminal and utilizes an interface table to support each of a plurality of virtual routers ~~accommendated~~ accommodated therein to perform routing actions independently from other virtual routers; and a memory which stores reference information used to execute predetermined packet processing actions on received packets; wherein the memory stores: the interface table holding, for each of interfaces, a relation among a physical interface identifier [[or a]] and at least one logical interface identifier of the received packet, an identifier representing a protocol supported by the logical interface, information specifying a packet processing action to be executed based upon the protocol, and a virtual router identifier, and a plurality of said logical interfaces are multiplexed to handle a plurality of protocols on the communication I/Fs respectively so as to transmit and receive packets to and from user terminals according to a respective protocol and per packet processing action; and a routing information table holding routing information to be processed by virtual routers corresponding to the virtual router identifiers, respectively; wherein the processor refers to the interface table and identifies an identifier of a virtual router that corresponds to a respective L2TP tunnel to process the received packets and reads from the routing information table routing information managed by the virtual router

corresponding to the virtual router identifier and forwards the received packets from an receiving logical interface to another interface associated with a respective virtual router, and the processor processes a received packet according to a respective protocol and per packet processing action according to a respective individual routing table of the respective virtual router; a program memory storing a program, the program for analyzing contents of management control commands received by the communication I/Fs; wherein the processor executes the management control commands to authorize, according to a contract, control command sources to change settings in the interface tables corresponding to all the virtual routers;

by a communication carrier who owns or manages the virtual access routers, associating interfaces connecting to networks of other communication carriers with particular virtual routers, and transferring to the other communication carriers authorities to use management control commands corresponding to the virtual routers.

19. (Previously Presented) A virtual access router according to claim 1, further comprising: at least one third logical interface, wherein

the third logical interface serves as the second logical interface of a first virtual router of the plurality of virtual routers and also serves as the first logical interface of a second virtual router of the plurality of virtual routers, and a packet is transmitted and received between the first virtual router and the second virtual router via the third logical interface.

20. (Previously Presented) A virtual access router according to claim 8, wherein in a case where the logical interface identifier is not directly related to the physical interface identifier,

the interface table includes an independent entry including the logical interface identifier but excluding any of the physical interface identifiers, and

a packet received by the communication I/F is subjected to a protocol processing by corresponding one of the virtual routers based on an entry including corresponding one of the physical interface identifiers of the interface table and then subjected to a protocol processing by corresponding one of the virtual routers based on an entry including corresponding one of the virtual interface identifiers of the interface table.